California Energy Commission
Public Interest Energy Research (PIER) Program
Industrial/Agriculture/Water End-Use

Energy Reduction in California Pipeline Operations

Research Powers the Future
PIER Industrial/Agriculture/Water End-Use
http://www.energy.ca.gov/research/iaw/index.html

September 2011

Fact Sheet

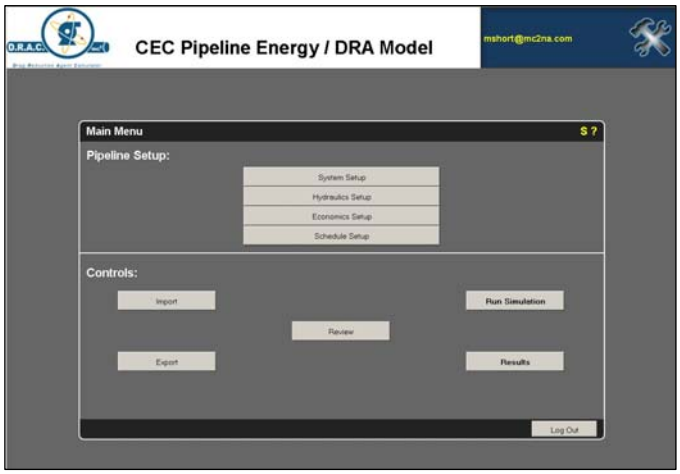
The Issue

Fluid pipelines operating in California transport gasoline, fuel oil, jet fuel, crude, other hydrocarbons, and water, all vital to the wellbeing of California's economy. These pipelines are also significant users of energy. In 2010, the transportation of crude oil and refined petroleum products consumed approximately 715 gigawatt-hours of electricity and over 13 million therms of natural gas. In addition to significant baseline energy consumption, more energy is often required by pipelines to respond to schedule requirements.

Project Description

This project will demonstrate the energy savings possible with the use of pump optimization software, scheduling optimization, and the use of drag reducing agents. The demonstration will be at the ConocoPhillips pipeline in California's San Joaquin Valley. mc2 Consulting will retool their existing pump optimization software to provide an integrated software solution to:

- Determine optimal pump selection (electric or natural gas engine-driven) and sequence for specific fluid.
- Identify or forecast scheduled periods of high pipeline flow and energy use to optimize the schedule to reduce those periods while maintaining throughput requirements.



Pipeline energy/Drag reducing agent model
Photo credit: mc2 Consulting Inc.

- Determine optimal drag reducing agent concentration profile based on fluid transported.

PIER Program Objectives and Anticipated Benefits for California

The PIER Industrial, Agriculture, and Water Program actively seeks emerging technologies that can help California's industrial sectors reduce their energy consumption, their water use, and green house gas emissions, all while maintaining productivity.

In 2010, the oil and gas industry in California consumed over 13,000 gigawatt-hours of electricity and over 3800 million therms of natural gas, by far the largest industrial end-user of energy that the Industrial, Agriculture, and Water Program works with.

This technology has the potential to save 23 gigawatt-hours per year in California. Additional savings are conservatively estimated at 50 megawatts in demand reductions (about the size of a typical natural gas fired peaker plant), and 5 thousand therms per year in gas use reduction. For this project, Pacific Gas and Electric is anticipated to provide the measurement and verification of all energy savings. Proven performance and verified economics by Pacific Gas and Electric's measurement and verification may make this software package eligible for utility incentives and rebates, which will enhance market penetration.

Project Specifics

Grant Agreement Number: PIR-10-018
Recipient: mc2 Consulting, Inc.
City/County: Atlanta, GA
Amount: $399,565
Co-funding: $124,283 (in-kind services)
Term: September 2010 to January 2013

For more information, please contact:

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